DOCUMENT RESUME

ED 252 618 UD 023 993

| | |
|---|---|
| TITLE | Estimates of the Population of Puerto Rico and the Outlying Areas: 1980-1983. |
| INSTITUTION | Bureau of the Census (DOC), Suitland, Md. |
| PUB DATE | Nov 84 |
| NOTE | 9p.; For population estimates for 1970-1982, see ED 241 660. |
| AVAILABLE FROM | Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. |
| PUB TYPE | Reports - General (140) |
| JOURNAL CIT | Current Population Reports; Series P-25 n960 Nov 1984 |
| EDRS PRICE | MF01/PC01 Plus Postage. |
| DESCRIPTORS | Migration; Population Growth; *Population Trends |
| IDENTIFIERS | American Samoa; Guam; Northern Mariana Islands; Pacific Trust Territory; Puerto Rico; Virgin Islands |

ABSTRACT

This report presents estimates of the population for July 1, 1980, to 1983 for Puerto Rico, the Virgin Islands of the United States, American Samoa, Guam, the Northern Mariana Islands, and the remainder of the Trust Territory of the Pacific Islands. For each of these areas, the report also gives 1980 census counts and the components of population change for the 1980-83 period (i.e. natural change, or births minus deaths and net migration). The following are the report's major points: (1) except for Puerto Rico, all of the areas are growing at a rate well above that of the United States; (2) of all the areas, Guam has exhibited the highest percent growth since 1980; (3) almost half of the large increase in the population of Guam between July 1, 1982, and July 1, 1983 was due to an increase of 2,700 in the number of dependents of the Armed Forces; (4) Puerto Rico grew by only 2.2 percent since 1980, partly because of the high net migration out of Puerto Rico between 1980 and 1983; and (5) the Virgin Islands, American Samoa, the Northern Mariana Islands, and the Trust Territory of the Pacific Islands all exhibited growth rates between those of Guam and Puerto Rico. (Author/KH)

**********
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
**********

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)
✓ This document has been reproduced as received from the person or organization originating it.
Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

ED252618

UD023993

CURRENT POPULATION REPORTS

Population Estimates and Projections

U.S. Department of Commerce
BUREAU OF THE CENSUS

Series P-25, No. 960
Issued November 1984

# Estimates of the Population of Puerto Rico and the Outlying Areas: 1980 to 1983

*(Estimates in this report supersede those for 1980 to 1982 published in Current Population Reports, Series P-25, No. 943. Estimates for Puerto Rico and the outlying areas for the 1970's, 1960's, and 1950's appear in Current Population Reports, Series P-25, Nos. 943, 603, and 336, respectively.)*

This report presents estimates of the population for July 1, 1980, to 1983 for Puerto Rico, the Virgin Islands of the United States, American Samoa, Guam, the Northern Mariana Islands, and the remainder of the Trust Territory of the Pacific Islands (table 1). Census counts for 1980 are also shown for each of the areas. Small areas under American jurisdiction in the Pacific Ocean such as Midway, Wake, and Canton Islands, and Johnston Atoll are excluded; there were 1,082 persons on these islands at the time of the 1980 census.[1]

The report also presents the components of population change for these areas for the 1980-83 period. The components of population change are natural change (births minus deaths) and net migration (the number of persons migrating into a particular area minus the number migrating from the area).[1] In some of the areas shown, net migration is not estimated directly but is derived as the difference between the total amount of change and natural change.

Except for Puerto Rico, all of the areas estimated are growing at a rate well above that of the United States (3.3 percent from April 1, 1980, to July 1, 1983). Of all the areas, Guam has exhibited the highest percent growth since 1980, 9.8 percent. Almost half of the large increase in the population of Guam between July 1, 1982, and July 1, 1983, was due to an increase of 2,700 in the number of dependents of the Armed Forces. Puerto Rico grew by only 2.2 percent since 1980, partly because of the high net migration out of Puerto Rico (-90,000) between 1980 and 1983. The Virgin Islands, American Samoa, the Northern Mariana Islands, and the Trust Territory of the Pacific Islands all exhibited growth rates between those of Guam and Puerto Rico.

## METHODOLOGY

Because the availability of data relating to population change varies from territory to territory and the concentration of special population groups in some of the areas makes it difficult to rely on standard methods, different procedures are used for each area.

**Puerto Rico.** The estimates for Puerto Rico were based on the 1980 census and on reported statistics for each of the components of population change. The migration component was derived from monthly passenger statistics on arrivals to and departures from Puerto Rico compiled by the Commonwealth government. The migration estimate for Puerto Rico is the sum of centered 12-month moving averages of the reported monthly data. This compensates for bias introduced by short-term fluctuations in passenger data which reflect the seasonal movement of transients (tourists and other visitors) rather than the movement of migrants to a new residence. The movement of transients tends to cancel out over longer periods.

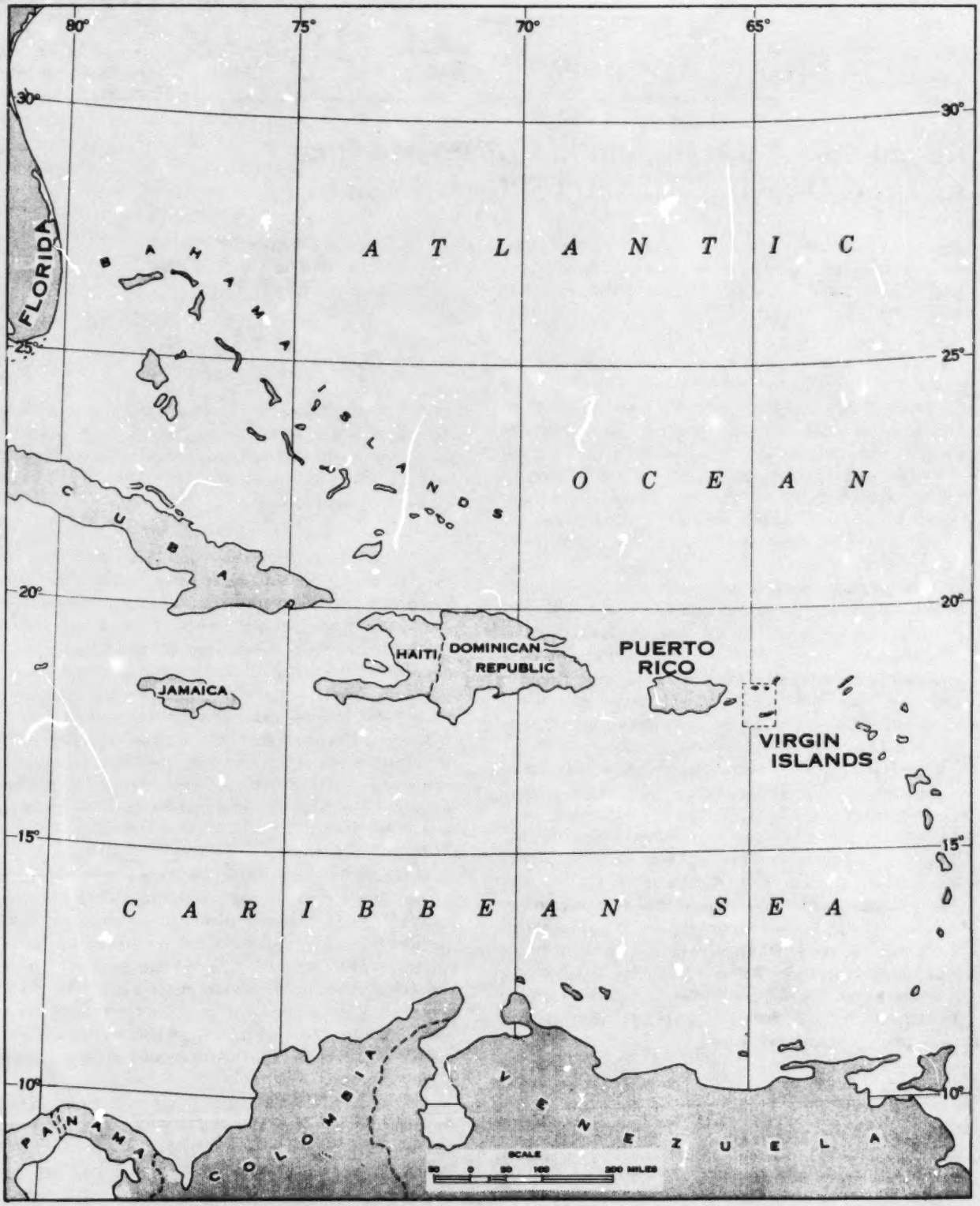
**Virgin Islands.** The estimates for the Virgin Islands were based on the 1980 census and reported births and deaths. Component Method II was used to estimate net migration. In this method, net migration is estimated on the basis of school enrollment data, using the difference between the estimated population of elementary school age and the population of school age expected on the basis of the most recent census and births since the census. A more detailed discussion of the method can be found in Current Population Reports, Series P-25, No. 640.

**American Samoa.** The estimates for American Samoa were based on the 1980 census and births and deaths reported by the Government of American Samoa. Since there is no

[1] As of October 1, 1979, the Canal Zone ceased to be under the "jurisdiction, control, or sovereignty" of the United States. Therefore, population estimates are no longer shown for this area. For estimates through 1976, see Current Population Reports, Series P-25, No. 731.

For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

## CARIBBEAN AREA



reporting system for migration, net migration must be estimated indirectly. For April 1, 1980, through July 1, 1983, the average annual amount of net migration was estimated based on the level of residual net migration for the 1977-80 period. The 1977-80 period was chosen because the Government of American Samoa conducted a survey in 1977 which could be used in conjunction with the 1980 census and reported births and deaths to estimate net migration.

**Guam.** The estimates of the population of Guam were developed by adding the components of change to the relevant population base. The July 1, 1980, 1981, 1982, and 1983 estimates were derived using a base composed of the 1980 census count less the estimated population on April 1, 1980, who were born in the United States.[2] The population base is restricted because of the large and relatively transient Federally affiliated population for which migration is substantial and difficult to estimate. Rather than estimate migration for this population group, administrative records were used to determine the number of Federally affiliated persons on each estimate date. The following were added to the relevant population base:

1. *Natural increase.* The excess of births over deaths to the population is based on reported birth and death statistics. Excluded are the births and deaths occurring in the U.S. Naval Hospital, which are accounted for in step 4.

2. *Change in alien contract workers.* This category is composed primarily of contract workers brought in from the Philippines by the Department of Defense. The estimates are based on information provided by the Guam Department of Commerce.

3. *Net alien immigration.* These are persons accepted for permanent residence in the United States. The estimate is based on Immigration and Naturalization Service figures on immigrants who reported on their visa application that they intended to live on Guam. It is assumed that 40 percent of the immigrants each year either leave Guam or inaccurately reported their intention of living on Guam.

4. *Federally affiliated population.* The number of Armed Forces stationed on Guam was obtained from the U.S. Department of Defense. The Guam Department of Commerce provided data on the numbers of Federal civilian employees and dependents of both Federal civilian employees and the military.

5. *Guamanian inductions less discharges.* The number of persons in the Armed Forces in the United States who lived on Guam before joining the military is available from the Department of Defense. One half the change in pre-service residence on Guam was used to approximate inductions less discharges on Guam.

No data are available on the movement of the non-federally affiliated population who are not covered above, but this component of net migration is probably not large.

Previous tests of the estimation procedure for Guam have shown a high bias in the procedure. Preliminary analyses suggest this bias may result from inflated estimates of immigration to Guam and from the double-counting of certain groups of Federally affiliated persons. To correct for these errors, estimated emigration has been increased from 20 to 40 percent of immigrants, and an estimate of Guamanian inductions into the Armed Forces less discharges has been incorporated into the procedure.

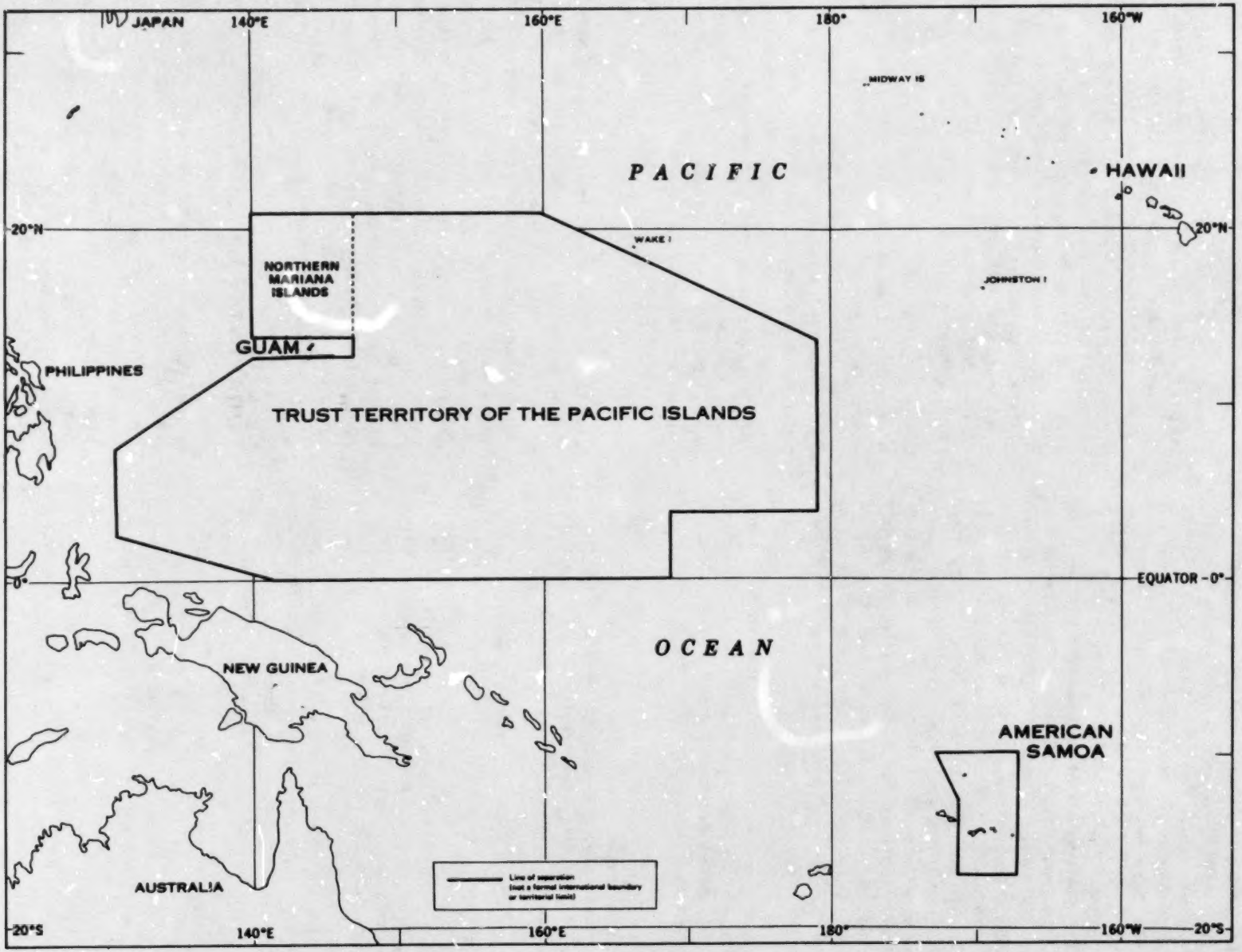
**Northern Mariana Islands.** Net migration for April 1, 1980, to July 1, 1983, was estimated based on revised migration estimates for the period 1973 to 1980. The estimates for July 1, 1980, 1981, 1982, and 1983 were then derived by adding the components of population change to the 1980 census count. Since net migration is computed as a residual and vital statistics are likely to be underreported, the residual probably includes underreported births and deaths to a much greater extent than in American Samoa. For this reason, net migration is not shown for the Northern Marianas or the Trust Territory in table 1.

**Trust Territory of the Pacific Islands, excluding Northern Mariana Islands.** The methodology used in deriving these estimates was basically the same as that used for the Northern Mariana Islands. The only difference was that the net migration was based on net migration computed using the September 12, 1977, Skill and Occupation Survey conducted by the Office of Planning and Statistics of the Government of the Trust Territory of the Pacific Islands and the 1980 census. It should also be noted that the census for the Trust Territory, excluding the Northern Mariana Islands was taken on September 15, 1980. As mentioned above, net migration is not shown in table 1 because of the suspected substantial underreporting of vital statistics.

## LIMITATIONS OF THE ESTIMATES

The areas for which estimates are presented in this report are unique in terms of size, location, and composition. This creates difficulty in developing appropriate estimating procedures, much less standard procedures that are applicable for all the areas. The poor quality and absence of adequate data make it difficult to prepare accurate estimates. The estimation techniques used in this report were selected either on the basis of a test of methods against the 1970 census

[2]The April 1, 1980, American population on Guam was estimated based on data furnished by the Guam Department of Commerce and the U.S. Department of Defense.


JAPAN
140°E
160°E
180°
160°W
MIDWAY IS
PACIFIC
HAWAII
20°N
WAKE I
JOHNSTON I
NORTHERN MARIANA ISLANDS
GUAM
PHILIPPINES
TRUST TERRITORY OF THE PACIFIC ISLANDS
EQUATOR - 0°
OCEAN
NEW GUINEA
AMERICAN SAMOA
AUSTRALIA
Line of separation (not a formal international boundary or territorial limit)
20°S
140°E
160°E
180°
160°W
20°S

or 1980 census[3] or on the basis of the use of additional data sources not previously available. A comparison of the 1980 census results and the estimates for 1980 is shown in table A.

For Puerto Rico, the estimating technique now used remains essentially unchanged from that used for the 1960's and 1970's. The accuracy of the estimate depends very heavily on the cancellation in the migration statistics of the large number of visitors who move between Puerto Rico and the mainland of the United States. Since gross arrival and departure data obviously contain a large number of tourists, net monthly figures are computed and smoothed using a 12-month moving average. This process provides rough approximations of net migration for Puerto Rico. The procedure estimated Puerto Rico's population less than 0.1 percent from the 1980 census.

In the case of the Virgin Islands, where Component Method II is employed, the difference between the April 1, 1980, estimate and the census count was trivial, only 23 persons. In 1970, the difference using that method in tests was less than 0.1 percent.

The estimating procedure used for American Samoa is a means of bridging a period when no possible independent migration estimates can be developed. The 1980 census, along with the 1977 survey, provide reference points which, in combination with reported vital statistics, can be used to yield acceptable estimates of net migration for the intervening period. The actual migration for each year in the period is unknown. In the absence of any other information concerning the annual migration pattern, it has been assumed that there was a smooth annual net outmigration during this period, and that this pattern has continued on through each year until the estimate date.

For Guam, as indicated earlier, the estimates are based on a special estimating method which yields point estimates of the various subcategories of the population. The test of this method for the 1960-70 period showed an overestimate of about 10 percent. This level and direction of error still existed in the estimates in 1980. Likely explanations for this include the lack of accurate migration data as well as conflicting information on persons who were born in the 50 States and on the special populations employed in the current methodology.

The estimates for the Northern Mariana Islands contain a similar level of error and are biased in the same direction. The 1980 error was 1,794 persons, or 10.7 percent. As was the case for Guam, the lack of any migration data combined with the lack of censuses or surveys during the intercensal period poses a serious problem in estimating the Northern Marianas population.

The Trust Territory of the Pacific Islands population estimates have essentially the same limitations as those for the Northern Mariana Islands. Fortunately, the 1977 Skill and Occupation Survey provided an additional, and apparently accurate, reference point. The error in estimating 1980 was only 61 persons or 0.1 percent.

Efforts will continue to be made to correct the estimation errors to the degree that available methodologies and data will permit.

## SOURCES OF DATA

Most of the statistics used to prepare the area estimates presented in this report were obtained from the local governments of the outlying areas. Data on births and deaths were obtained from the local governments for Puerto Rico and the outlying areas. Armed Forces data are based on figures provided by the Coast Guard and the Department of Defense. School enrollment data for the Virgin Islands were supplied by the Virgin Islands Department of Education. For Puerto Rico, data on migration were supplied by the Puerto Rico Planning Board. The number of Federal civilian employees on Guam was obtained from the Guam Department of Commerce.

[3] For more information on the 1970 test, see Current Population Reports, Series P-25, No. 731. The 1980 test results are reported in Series P-25, No. 919.

**Table A. Comparison of 1980 Census and Population Estimates for Puerto Rico and Outlying Areas**

| Area | 1980 census | 1980 provisional population estimate | Error[1] | Percent error[2] |
|---|---|---|---|---|
| Puerto Rico | 3,196,520 | 3,195,130 | -1,390 | - |
| Virgin Islands | 96,569 | 96,546 | -23 | - |
| American Samoa | 32,297 | 32,260 | -37 | -0.1 |
| Guam | 105,979 | 116,251 | 10,272 | 9.7 |
| Northern Mariana Islands | 16,780 | 18,574 | 1,794 | 10.7 |
| Trust Territory of the Pacific Islands, excluding Northern Mariana Islands | 116,149 | 116,210 | 61 | 0.1 |

- Represents zero.
[1] The error of closure is the difference between the 1980 provisional population estimate and the 1980 census count.
[2] Base for percent is 1980 census count.

## ROUNDING OF ESTIMATES

Each estimate in this report has been rounded independently to the nearest thousand (Puerto Rico) or hundred (other areas) from figures computed to the last digit. Hence, the sum of the parts may differ from the total shown. Percentages are based on unrounded numbers.

## Table 1. Estimates of the Components of Change in the Resident Population of Puerto Rico and Outlying Areas: April 1, 1980, to July 1, 1983

(Resident population includes persons in the Armed Forces stationed in each area. Each estimate has been rounded to the nearest thousand for Puerto Rico and to the nearest hundred for the outlying areas)

| Period and area | Population at end of period | Change | | Components of change | | |
|---|---|---|---|---|---|---|
| | | Number | Percent | Births | Deaths | Net migration |
| Caribbean areas: | | | | | | |
| Puerto Rico | 3,267,000 | 70,000 | 2.2 | 229,000 | 69,000 | -90,000 |
| Virgin Islands | 103,800 | 7,200 | 7.5 | 8,100 | 1,700 | 800 |
| Pacific areas: | | | | | | |
| American Samoa | 34,500 | 2,200 | 6.8 | 3,700 | 500 | -1,100 |
| Guam | 116,400 | 10,400 | 9.8 | [1]9,500 | [1]1,400 | [2]2,200 |
| Northern Mariana Islands | 18,200 | 1,400 | 8.6 | 2,000 | 300 | ** |
| Trust Territory of the Pacific Islands[3] | 124,000 | 7,900 | 6.8 | 11,700 | 1,600 | ** |

** Because part of the residual migration in this area reflects underregistration of vital statistics, migration figures are not shown.

[1] Total births and deaths.

[2] Includes movement of members of the Armed Forces and their dependents.

[3] Excludes Northern Mariana Islands. Census taken September 15, 1980. Period covered is September 15, 1980 to July 1, 1983.

## Table 2. Estimates of the Resident and Civilian Populations of Puerto Rico and Outlying Areas: 1980 to 1983

(Each estimate has been rounded to the nearest thousand for Puerto Rico and to the nearest hundred for the outlying areas)

| Date (July 1, except as noted) | Puerto Rico | Virgin Islands | American Samoa | Guam | Northern Mariana Islands | Trust Territory of the Pacific Islands[1] |
|---|---|---|---|---|---|---|
| RESIDENT POPULATION | | | | | | |
| 1983 | 3,267,000 | 103,800 | 34,500 | 116,400 | 18,200 | 124,000 |
| 1982 | 3,262,000 | 101,500 | 33,800 | 110,700 | 17,800 | 121,400 |
| 1981 | 3,245,000 | 98,300 | 33,100 | 110,000 | 17,300 | 118,600 |
| 1980 (Sept. 15) | ** | ** | ** | ** | ** | 116,149 |
| 1980 | 3,206,000 | 97,700 | 32,400 | 106,900 | 16,900 | 115,600 |
| 1980 (April 1) | 3,196,520 | 96,569 | 32,297 | 105,979 | 16,780 | ** |
| CIVILIAN POPULATION | | | | | | |
| 1983 | 3,267,000 | 103,800 | 34,500 | 108,400 | 18,200 | 123,900 |
| 1982 | 3,259,000 | 101,500 | 33,800 | 102,700 | 17,800 | 121,400 |
| 1981 | 3,242,000 | 98,300 | 33,100 | 101,500 | 17,300 | 118,500 |
| 1980 (Sept. 15) | ** | ** | ** | ** | ** | 116,100 |
| 1980 | 3,202,000 | 97,700 | 32,400 | 97,500 | 16,900 | 115,500 |
| 1980 (April 1) | 3,192,000 | 96,600 | 32,300 | 96,700 | 16,800 | ** |

** No census held on that date.

[1] Excludes Northern Mariana Islands.